Installing the CTX2500 Card in the Cisco ONS 15310-MA

Product Names: 15310-CTX-2500-K9

This document provides a card description, specifications, and an installation procedure for the Cisco ONS 15310-MA CTX2500 card. As appropriate use this document in conjunction with the *Cisco ONS 15310-CL and Cisco ONS 15310-MA Procedure Guide,* the *Cisco ONS 15310-CL and Cisco ONS 15310-MA Reference Manual,* and the *Cisco ONS 15310-CL and Cisco ONS 15310-MA Troubleshooting Guide* when working with CTX2500 cards.

This document contains the following sections:

CTX2500 Card Description

The CTX2500 card, for use with the ONS 15310-MA, is a fully nonblocking cross-connect card that operates in either a simplex or duplex (redundant) configuration. It performs system initialization, provisioning, alarm reporting, maintenance, diagnostics, IP address detection/resolution, SONET DCC termination, system fault detection, and cross-connect maintenance and management for the ONS 15310-MA. The card also provides the circuitry for the OC-3/OC-12/OC-48 interfaces, and ensures that the system maintains timing with SMC stability.

⚠ **Caution** If the system loses power or the CTX2500 card is reset, you must reset the ONS 15310-MA clock unless the node has been previously provisioned to use Simple Network Time Protocol (SNTP) to update the clock over the LAN.

CISCO SYSTEMS

Corporate Headquarters:
Cisco Systems, Inc., 170 West Tasman Drive, San Jose, CA 95134-1706 USA

The CTX2500 card provides 576 x 576 STS-1 level cross-connections and 2688 x 2688 VT1.5s.

The CTX2500 card can be installed in Slot 3 or 4. Protection switches between the active and standby CTX 2500 are hitless (less than a 50-ms impact to any traffic).

The CTX2500 supports errorless side switches (switching from one CTX2500 on one side of the shelf to the other CTX2500 on the other side of the shelf) when the switch is initiated through software or is caused by a software upgrade.

There are two PPM (SFP) slots on the CTX2500 faceplate. Each slot can contain a one-port PPM. Cisco-qualified SFPs can be single-rate (OC-3, OC-12, or OC-48) or multirate (OC-3/OC-12). Single-rate PPMs are autoprovisioned when they are installed, but multirate PPMs must be provisioned. This behavior can be controlled by NE defaults.

Faceplate and Block Diagram

Figure 1 shows the CTX2500 card faceplate and block diagram.

Figure 1   *CTX2500 Faceplate and Block Diagram*
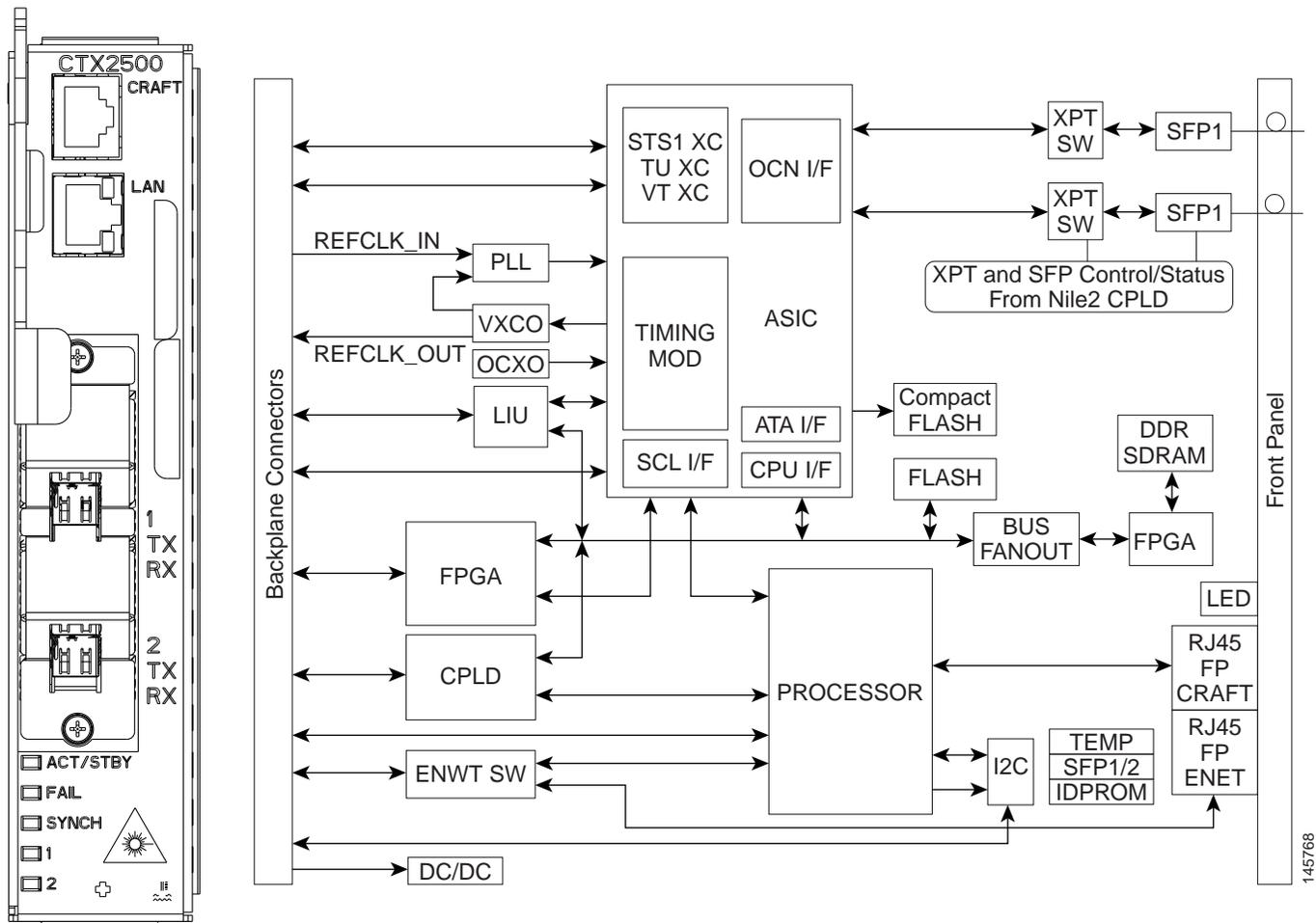
CTX2500 Card-Level Indicators

The CTX card has four card-level LEDs, described in Table 1.

Table 1   CTX2500 Card-Level Indicators

Card-Level LEDs	Description
FAIL LED (Red)	The red FAIL LED indicates that the card processor is not ready or that a catastrophic software failure occurred on the card. As part of the boot sequence, the FAIL LED turns on and flashes until the software deems the card operational.
ACT/STBY LED (Green/Amber)	The ACT/STBY LED is green if the card is the active CTX2500 card. It is amber if the card is the standby card.
SYNC LED (Green/Amber)	The SYNC LED is green if the CTX2500 card detects both a primary and secondary clock reference. It is amber if the card detects only a single clock reference.

CTX2500 Port-Level Indicators

Two bicolor LEDs show the status per port (Ports 1 and 2). The port LED is green if the port is available to carry traffic and is provisioned as in-service. The port LED is red if there is a signal failure or loss of signal on the port.

CTX2500 Card Specifications

Optical Ports

- Line
  - Bit rate: OC-3 (155.520 Mbps), OC-12, (622.080 Mbps), and OC-48 (2488.320 Mbps), depending on the SFP installed
  - Code: Scrambled NRZ
  - Fiber: Depends on the SFP used
    (see the SFP specifications in the *Cisco ONS 15310-CL and Cisco ONS 15310-MA Reference Manual*)
  - Loopback modes: Terminal and facility
  - Connectors: LC duplex connector for each SFP
  - Compliance: Telcordia SONET, Telcordia GR-253-CORE, ITU-T G.707, ITU-T G.957

- Transmitter
  - Maximum transmitter output power: Depends on the SFP used
    (see the SFP specifications in the *Cisco ONS 15310-CL and Cisco ONS 15310-MA Reference Manual*)
  - Minimum transmitter output power: Depends on the SFP used
    (see the SFP specifications in the *Cisco ONS 15310-CL and Cisco ONS 15310-MA Reference Manual*)
  - Center wavelength: See wavelength plan
  - Center wavelength accuracy: 1 nm to 4 nm, depending on the SFP used
  - Transmitter: DFB laser
- Receiver
  - Maximum receiver level: Depends on the SFP used
    (see the SFP specifications in the *Cisco ONS 15310-CL and Cisco ONS 15310-MA Reference Manual*)
  - Minimum receiver level: Depends on the SFP used
    (see the SFP specifications in the *Cisco ONS 15310-CL and Cisco ONS 15310-MA Reference Manual*)
  - Receiver: PIN PD
  - Receiver input wavelength range: Depends on the SFP used
    (see the SFP specifications in the *Cisco ONS 15310-CL and Cisco ONS 15310-MA Reference Manual*)
- Environmental
  - Operating temperature:

    C-Temp: +23 to +131 degrees Fahrenheit (–5 to +55 degrees Celsius)

    I-Temp: –40 to +149 degrees Fahrenheit (–40 to +65 degrees Celsius)
  - Operating humidity: 5 to 95 percent, noncondensing
  - Power consumption: 9.28 W, 0.19 A, 31.68 BTU/hr
- Dimensions
  - Height: 6.94 in. (167.28 mm)
  - Width: 1.45 in. (36.83 mm)
  - Depth: 8.35 in. (212.09 mm)
  - Weight not including clam shell: 1.6 lb (0.73 kg)

LAN Port

- Supports a 10/100-Mbps Ethernet interface for Cisco Transport Controller/Transaction Language One (CTC/TL1) provisioning.

CRAFT Port

- An EIA/TIA-232 craft interface is provided and is used for TL1 provisioning.
- The craft interface is set to 9600 baud, no parity, and 1 stop bit by default.

Nonvolatile Memory

The ONS 15310-MA nonvolatile memory has the following specifications:

- 128 MB, Compact Flash card

Install the CTX2500 Cards

Warning **Blank faceplates and cover panels serve three important functions: they prevent exposure to hazardous voltages and currents inside the chassis; they contain electromagnetic interference (EMI) that might disrupt other equipment; and they direct the flow of cooling air through the chassis. Do not operate the system unless all cards, faceplates, front covers, and rear covers are in place.** Statement 1029

Warning **During this procedure, wear grounding wrist straps to avoid electrostatic discharge (ESD) damage to the card. Do not directly touch the backplane with your hand or any metal tool, or you could shock yourself.** Statement 94

Warning **Invisible laser radiation could be emitted from the end of the unterminated fiber cable or connector. Do not stare into the beam directly with optical instruments. Viewing the laser output with certain optical instruments (for example, eye loupes, magnifiers, and microscopes) within a distance of 100 mm could pose an eye hazard.** Statement 1056

Warning **Class I (CDRH) and Class 1M (IEC) laser products.** Statement 1055

Warning **Use of controls, adjustments, or performing procedures other than those specified may result in hazardous radiation exposure.** Statement 1057

Caution Do not install a CTX2500 card in an ONS 15310-MA if the ambient temperature exceeds 149 degrees F (65 degrees C).

Caution Always use the supplied ESD wristband when working with a powered ONS 15310-MA. Plug the wristband cable into either of the ESD jacks, on the far left and right faceplates in the shelf.

> ✎
>
> **Note** If protective clips are installed on the backplane connectors of the cards, remove the clips before installing the cards.

Step 1 Install a CTX2500 card in Slot 3 or 4 (Figure 2):

    a. Open the card ejector.

    b. Use the ejector at the top of the card and firmly slide the card along the guide rails until the card plugs into the receptacle at the back of the slot.

    c. Verify that the card is inserted correctly and close the ejector on the card.

> ✎
>
> **Note** The CTX2500 cards are hot-pluggable, so they can be inserted or removed without turning off the power to the ONS 15310-MA.

Figure 2   *Installing a CTX2500 Card in ONS 15310-MA*

144703
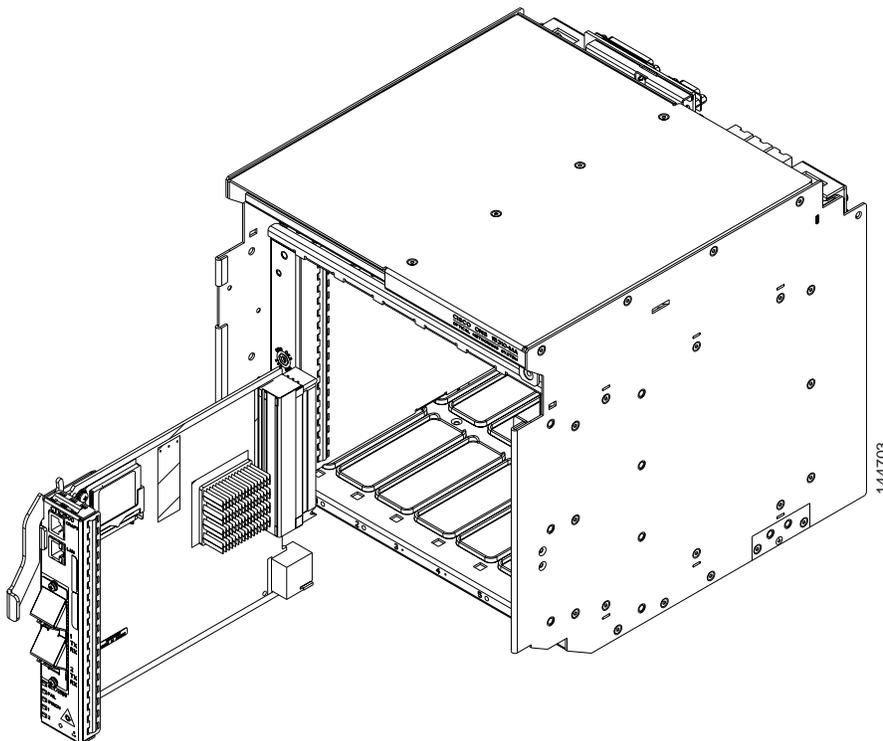
Step 2 Verify the CTX2500 card LED activity:

    a. The red FAIL LED turns on for 30 to 45 seconds. It then turns off for 5 seconds, and turns back on for 30 seconds.

    b. The red FAIL LED blinks for 20 seconds, and turns off for 5 seconds.

    c. All LEDs turn on for 2 seconds.

d. The ACT/STBY LED turns on. It is green if the card is active, or amber if the card is standby.

Step 3 When you log into CTC, verify that the card appears properly in CTC node view.

Related Documentation

- *Cisco ONS 15310-CL and Cisco ONS 15310-MA Procedure Guide*
- *Cisco ONS 15310-CL and Cisco ONS 15310-MA Reference Manual*
- *Cisco ONS 15310-CL and Cisco ONS 15310-MA Troubleshooting Guide*

Obtaining Documentation

Cisco documentation and additional literature are available on Cisco.com. Cisco also provides several ways to obtain technical assistance and other technical resources. These sections explain how to obtain technical information from Cisco Systems.

Cisco.com

You can access the most current Cisco documentation on the World Wide Web at this URL:

http://www.cisco.com/univercd/home/home.htm

You can access the Cisco website at this URL:

http://www.cisco.com

International Cisco websites can be accessed from this URL:

http://www.cisco.com/public/countries_languages.shtml

Ordering Documentation

You can find instructions for ordering documentation at this URL:

http://www.cisco.com/univercd/cc/td/doc/es_inpck/pdi.htm

You can order Cisco documentation in these ways:

- Registered Cisco.com users (Cisco direct customers) can order Cisco product documentation from the Ordering tool:

  http://www.cisco.com/en/US/partner/ordering/index.shtml

- Nonregistered Cisco.com users can order documentation through a local account representative by calling Cisco Systems Corporate Headquarters (California, USA) at 408 526-7208 or, elsewhere in North America, by calling 800 553-NETS (6387).

Cisco Optical Networking Product Documentation CD-ROM

Optical networking-related documentation, including Cisco ONS 15454, Cisco ONS 15454 SDH, Cisco ONS 15327, Cisco ONS 15600, Cisco ONS 15310-CL, and Cisco ONS 15310-MA product documentation, is available in a CD-ROM package that ships with your product. The Optical Networking Product Documentation CD-ROM is updated periodically and may be more current than printed documentation.

Documentation Feedback

You can submit e-mail comments about technical documentation to bug-doc@cisco.com.

You can submit comments by using the response card (if present) behind the front cover of your document or by writing to the following address:

Cisco Systems
Attn: Customer Document Ordering
170 West Tasman Drive
San Jose, CA 95134-9883

We appreciate your comments.

Obtaining Technical Assistance

For all customers, partners, resellers, and distributors who hold valid Cisco service contracts, the Cisco Technical Assistance Center (TAC) provides 24-hour-a-day, award-winning technical support services, online and over the phone. Cisco.com features the Cisco TAC website as an online starting point for technical assistance. If you do not hold a valid Cisco service contract, please contact your reseller.

Cisco TAC Website

The Cisco TAC website provides online documents and tools for troubleshooting and resolving technical issues with Cisco products and technologies. The Cisco TAC website is available 24 hours a day, 365 days a year. The Cisco TAC website is located at this URL:

http://www.cisco.com/tac

Accessing all the tools on the Cisco TAC website requires a Cisco.com user ID and password. If you have a valid service contract but do not have a login ID or password, register at this URL:

http://tools.cisco.com/RPF/register/register.do

Opening a TAC Case

Using the online TAC Case Open Tool is the fastest way to open P3 and P4 cases. (P3 and P4 cases are those in which your network is minimally impaired or for which you require product information.) After you describe your situation, the TAC Case Open Tool automatically recommends resources for an immediate solution. If your issue is not resolved using the recommended resources, your case will be assigned to a Cisco TAC engineer. The online TAC Case Open Tool is located at this URL:

http://www.cisco.com/tac/caseopen

For P1 or P2 cases (P1 and P2 cases are those in which your production network is down or severely degraded) or if you do not have Internet access, contact Cisco TAC by telephone. Cisco TAC engineers are assigned immediately to P1 and P2 cases to help keep your business operations running smoothly.

To open a case by telephone, use one of the following numbers:

Asia-Pacific: +61 2 8446 7411 (Australia: 1 800 805 227)
EMEA: +32 2 704 55 55
USA: 1 800 553-2447

For a complete listing of Cisco TAC contacts, go to this URL:

http://www.cisco.com/warp/public/687/Directory/DirTAC.shtml

TAC Case Priority Definitions

To ensure that all cases are reported in a standard format, Cisco has established case priority definitions.

Priority 1 (P1)—Your network is "down" or there is a critical impact to your business operations. You and Cisco will commit all necessary resources around the clock to resolve the situation.

Priority 2 (P2)—Operation of an existing network is severely degraded, or significant aspects of your business operation are negatively affected by inadequate performance of Cisco products. You and Cisco will commit full-time resources during normal business hours to resolve the situation.

Priority 3 (P3)—Operational performance of your network is impaired, but most business operations remain functional. You and Cisco will commit resources during normal business hours to restore service to satisfactory levels.

Priority 4 (P4)—You require information or assistance with Cisco product capabilities, installation, or configuration. There is little or no effect on your business operations.

Obtaining Additional Publications and Information

Information about Cisco products, technologies, and network solutions is available from various online and printed sources.

- Cisco Marketplace provides a variety of Cisco books, reference guides, and logo merchandise. Go to this URL to visit the company store:

  http://www.cisco.com/go/marketplace/

- The Cisco *Product Catalog* describes the networking products offered by Cisco Systems, as well as ordering and customer support services. Access the Cisco Product Catalog at this URL:

  http://cisco.com/univercd/cc/td/doc/pcat/

- *Cisco Press* publishes a wide range of general networking, training and certification titles. Both new and experienced users will benefit from these publications. For current Cisco Press titles and other information, go to Cisco Press online at this URL:

  http://www.ciscopress.com

- *Packet* magazine is the Cisco quarterly publication that provides the latest networking trends, technology breakthroughs, and Cisco products and solutions to help industry professionals get the most from their networking investment. Included are networking deployment and troubleshooting tips, configuration examples, customer case studies, tutorials and training, certification information, and links to numerous in-depth online resources. You can access Packet magazine at this URL:

  http://www.cisco.com/packet

- *iQ Magazine* is the Cisco bimonthly publication that delivers the latest information about Internet business strategies for executives. You can access iQ Magazine at this URL:

  http://www.cisco.com/go/iqmagazine

- *Internet Protocol Journal* is a quarterly journal published by Cisco Systems for engineering professionals involved in designing, developing, and operating public and private internets and intranets. You can access the Internet Protocol Journal at this URL:

  http://www.cisco.com/ipj

- Training—Cisco offers world-class networking training. Current offerings in network training are listed at this URL:

  http://www.cisco.com/en/US/learning/index.html